

# Audit



# Report

OFFICE OF THE INSPECTOR GENERAL

**CONTRACT FOR ROTARY SWEEPER BROOM  
REFILLS FOR AIRPORT SNOW REMOVAL**

Report No. 97-135

April 25, 1997

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**Department of Defense**

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### **Acronyms**

|      |  |
|------|--|
| AISI | American Institute of Standards Incorporated |
| CID  | Commercial Item Description                  |
| DCMC | Defense Contract Management Command          |
| DSCC | Defense Supply Center, Columbus              |
| FAR  | Federal Acquisition Regulation               |
| NSN  | National Stock Number                        |
| PQDR | Product Quality Deficiency Report            |
| QAR  | Quality Assurance Representatives            |



**INSPECTOR GENERAL**  
**DEPARTMENT OF DEFENSE**  
**400 ARMY NAVY DRIVE**  
**ARLINGTON, VIRGINIA 22202-2884**



April 25, 1997

**MEMORANDUM FOR DIRECTOR, DEFENSE LOGISTIC AGENCY**

**SUBJECT: Audit Report on Contract for Rotary Sweeper Broom Refills for Airport  
Snow Removal (Report No. 97-135)**

We are providing this audit report for information and use. We conducted the audit in response to a congressional request. Management comments on a draft of this report were considered in preparing the final report.

Comments on a draft of this report conformed to the requirements of DoD Directive 7650.3 and left no unresolved issues. Therefore, no additional comments are required.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Mr. Terry L. McKinney, Audit Program Director, at (703) 604-9288 (DSN 664-9288) or Mr. Michael H. Claypool, Audit Project Manager, at (703) 604-9291 (DSN 664-9291). See Appendix H for the report distribution. The audit team members are listed inside the back cover.

Robert J. Lieberman  
Assistant Inspector General  
for Auditing

## Office of the Inspector General, DoD

Report No. 97-135  
(Project No. 6CF-5050)

April 25, 1997

### Contract for Rotary Sweeper Broom Refills for Airport Snow Removal

#### Executive Summary

**Introduction.** We initiated the audit as a result of a letter from Senator Michael DeWine regarding allegations from a constituent. The constituent alleged that the Defense Supply Center, Columbus, Ohio, awarded a firm-fixed price contract for \$232,010 to Danline, Incorporated (Danline), for tufted wire brush refills (tufted brushes) that was improper. The contract was improperly awarded because Danline had not demonstrated its ability to manufacture this product and a first article test required in the contract solicitation was erroneously waived.

Military installations use commercial rotary broom sweepers to remove snow and ice from their airport runways. Accordingly, the broom refills must be of sufficient quality to preclude the brushes from coming apart. Loose brush material can cause catastrophic result if ingested into aircraft engines. The Defense Supply Center, Columbus manages 11 different types of rotary brush refills. From 1993 through 1996, the Defense Supply Center, Columbus procured 52,135 brush refills, totaling \$923,643, from three contractors.

**Audit Objectives.** The overall objective of the audit was to determine whether the allegations have merit.

**Audit Results.** The allegations were not substantiated. On February 15, 1996, Defense Supply Center, Columbus competitively awarded contract SPO770-96-C-3531 to Danline in accordance with the Federal Acquisition Regulation. Danline had demonstrated the ability to manufacture tufted brushes on two prior contracts. In addition, Defense Supply Center, Columbus made the proper decision to waive first article testing when the contract was awarded. We did identify three conditions warranting management action.

- o The use of purchase description requirements by the Defense Supply Center, Columbus to procure rotary sweeper tufted brushes limits the type and quality of brushes available for purchase. As a result, Defense Supply Center, Columbus is not procuring the latest rotary sweeper brush technology for snow and ice removal at military airfields (Finding A).

- o Defense Contract Management Command, Springfield, did not complete an investigation on the Product Quality Deficiency Report of Danline tufted brushes delivered under contract SPO770-95-C-3508. Defective tufted brushes were delivered and remain in the DoD inventory system (Finding B).

o Quality assurance oversight of the Danline contracts needed improvement. As a result, the Military Services have received and used nonconforming tufted brushes (Finding C).

**Summary of Recommendations.** We recommend that the Director, Defense Logistics Agency, purchase rotary sweeper brushes using commercial item descriptions instead of purchase descriptions unique to DoD. We recommend acquiring and testing product samples of commercial brushes prior to issuing a contract solicitation to a vendor. We also recommend that Danline tufted brushes in the DoD inventory be inspected and tested to ensure compliance with the contract terms. For those brushes that do not meet contract terms, adequate consideration should be requested from the contractor. Finally, we recommend that the Defense Contract Management Command inspect all future deliveries of brushes under Danline contracts.

**Management Comments.** The Principal Deputy Director, Defense Logistics Agency, concurred with the intent of all recommendations and indicated that corrective actions are being taken. A performance based commercial item description is being developed for the tufted steel brush refills that have quality problems. The commercial item description format and general content has been approved by the Deputy Under Secretary of Defense (Industrial Affairs and Installations). Also, the Principal Deputy Director stated that he is considering the development of commercial item descriptions for the other rotary sweeper brushes and procuring the brushes using Customer Value Contracting to allow customers to order from their manufacturer of choice. The tufted brushes delivered under the 1995 and 1996 Danline contracts were sent to the Product Testing Center at Columbus. Based on the laboratory test failures, a Product Quality Deficiency Report investigation was initiated for each contract on February 4, 1997. Upon completion of the investigation, if Danline is responsible for defective tufted brushes, then Government negotiations for consideration will occur. The Principal Deputy Director also agreed to increase quality inspection oversight of future Danline brushes prior to acceptance by the Government. A safety alert will be issued to customers identified in the requisition history files that received Danline brushes.

The Principal Deputy Director, Defense Logistics Agency, did not agree that testing product samples prior to issuing a contract solicitation to a vendor is the best method to assure a quality product. The product test could add cost and time to the acquisition process. Instead, the Principal Deputy Director will issue a Quality Assurance Letter of Instruction to inspect Danline's specific manufacturing processes. In addition, the Principal Deputy Director intends to request that a product verification testing clause be added to the contract to require laboratory tests if the in-process inspection does not verify a quality product. This alternative action meets the intent of our recommendation. See Part I for a discussion of management comments, and Part III for a complete text of management comments.

**Audit Response.** The Principal Deputy Director, Defense Logistics Agency, comments are fully responsive to the recommendations. We commend the Defense Logistics Agency for being responsive to the recommendations to improve the quality of brushes purchased by the Government, and the initiative to use commercial item descriptions and customer value contracting that will allow manufacturers to supply quality products.

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## **Part I - Audit Results**

### Audit Background

We initiated the audit as a result of a letter from Senator Michael DeWine regarding allegations from a constituent. The constituent alleged that a Defense Supply Center, Columbus (DSCC) contract (SP0770-96-C-3531) awarded to Danline, Incorporated (Danline), February 15, 1996, for tufted wire brush refills (tufted brush) was improper because Danline had not demonstrated the ability to manufacture this product. The constituent also alleged that DSCC improperly waived a first article test required in the contract solicitation.

Military installations use tufted brushes on commercial rotary broom sweepers to remove debris, snow, and ice from airfield runways. The brush is a safety sensitive item and must currently conform to the DSCC purchase description and drawing requirements for tufted brushes. Loose bristles have the potential to be ingested by aircraft jet engines with catastrophic results. Because of high operating broom speeds of airport sweepers, wire from tufted brushes can become projectiles that could injure airport personnel or equipment operators.

In 1989, the item manager for airfield sweeper brushes was Warner Robins Air Logistics Center, Robins Air Force Base. The Air Force developed the purchase description (PD89-VRG23), drawings, and assigned multiple national stock numbers (NSNs) for the different types of brushes used by military customers. In the early 1990s, item management responsibility was transferred to DSCC (formerly the Defense Construction Supply Center). Purchase descriptions of brushes and spacers are located in Appendix C .

DSCC manages 11 NSNs for different types of brushes for commercial rotary sweeper brooms and 4 NSNs for brush spacers. The NSNs are for rotary sweeper brush refills constructed of polyester or steel wire bristles. There are two brush sizes with inside and outside diameters of (19-1/2 inch by 46 inch) and (10-3/4 inch by 36 inch) respectively, that are installed on rotary sweeper broom cores. Appendix D has the NSNs for airfield brush and spacer types. Appendix E illustrates pictures of rotary brushes.

### Audit Objectives

The primary audit objective was to determine whether the complaint made to Senator Michael Dewine had merit. Specifically, the constituent, United Rotary Brush Corporation, alleged that the award of a contract by DSCC to Danline was improper because Danline had not demonstrated its ability to manufacture rotary broom refills. The constituent also alleged that DSCC improperly waived first article testing after awarding the contract. The audit did not evaluate the management control program because of the limited scope of the audit. In addition, the audit did not review performance indicators because they were not applicable. See Appendix A for a discussion of the scope, methodology, and a summary of prior audit coverage related to the audit objectives.



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## **Finding A. Procurement of Commercially Available Items**

The Defense Supply Center, Columbus (DSCC) use of purchase description requirements to procure rotary sweeper tufted brushes limits the type and quality of brushes available for military airfields. These limitations occurred because DSCC had not developed a performance based commercial item description to replace the purchase description used to procure brushes. As a result, DSCC is not procuring the latest rotary sweeper brush technology for snow and ice removal at military airfields.

### **DoD Initiative of Performance Specifications**

In June 1994, the Secretary of Defense directed that whenever possible, DoD item requirements should be defined by performance specifications. The Secretary stated that "by not dictating a predetermined design or production solution, the Department allows contractors to offer the most cost effective, technologically advanced solutions to meet the item requirement." For commercially available items, DoD is preparing simplified, performance-based product descriptions called commercial item descriptions (CIDs).

Commercial item descriptions (CIDs) are simplified product descriptions that describe the available, acceptable commercial items that meet DoD needs. CIDs are normally used to buy commercial items when development of a standardization document is justified. The user's requirement, market research, and coordination with industry form the basis for the development of a CID. You can include requirements for samples or market acceptance in a CID - both are useful tools in simplifying the document.

**Guidance.** Federal Acquisition Regulation (FAR), part 12, "Acquisition of Commercial Items," prescribes the policy and procedures for the acquisition of commercial items. This guidance implements the Government's preference for the acquisition of commercial items as required in Title VIII of the Federal Acquisition Streamlining Act of 1994 (Public Law 103-355).

### **Brush Purchase Description**

The DSCC use of purchase description requirements to procure rotary sweeper tufted brushes for military airfields limits the type and quality of brushes available to the DoD supply system. The tufted brush version has been the primary brush used by the military to remove snow and ice from runways. Appendix E illustrates pictures of brush variants.

## **Finding A. Procurement of Commercially Available Items**

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**Purchase Limits.** Because the DSCC purchase description requires a specific manufacturing design, this restricts vendor competition to two commercial vendors who manufacture the DSCC tufted brush version. As a result, DSCC does not have the option of purchasing other commercially available versions of tufted brushes from other vendors.

**Tufted Brush.** The tufted brush version is a safety sensitive item. The tufted brush purchase description requires a design and fabrication process that uses a steel retaining pin to attach the tufted brush assembly into a plastic cup located on the steel rim of the brush.

The design and fabrication process has resulted in contractor quality problems if the retaining pin is not properly inserted through the tufts' bristles and the steel rim. If the steel pin or the tuft bristles become detached, they have the potential to be ingested by military aircraft jet engines or flatten aircraft tires. Both of these potential problems can lead to catastrophic results. Also, because airport sweepers operate at high broom speeds, loose tufted brush retaining pins or bristle materiel can become projectiles that can injure airport personnel or equipment operators.

## **Commercial Item Description**

Under Government acquisition reform, DSCC should have developed a performance based CID to replace the purchase description for brushes. Although municipal airports have been purchasing the same types of sweeper brushes commercially for many years, DSCC has continued to use a purchase description for the 15 NSNs used to procure brushes and spacers.

**Draft Commercial Item Description.** Although late with its initiative, DSCC is developing a CID for the tufted brushes to replace the NSN purchase description presently used to procure tufted brushes. In our opinion, the salient performance characteristics of the draft CID are too design specific, and include requirements that dictate how to manufacture the tufted brushes. The draft CID does not comply with Government guidance for content and language style. The DSCC purchase description, currently in use, establishes the basis for the salient performance characteristics for the draft CID. However, DSCC does not plan to develop CIDs for the remaining 13 NSNs (rotary brushes and spacers) because DSCC is transferring item management responsibility in March 1997, to the Defense Industrial Supply Center, Philadelphia, PA. The following salient characteristics are excerpts from the draft CID.

**Performance Specifications.** The performance specifications require the brush to be operated on concrete runways at a sweeping speed of 35 MPH, a rotations speed of 500 RPM with a brush pattern of not less than 2 inches but not greater than 4 inches, and the brushes must be capable of operating for at least 200 hours.

## Finding A. Procurement of Commercially Available Items

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**Ring Specifications.** The brush ring shall be made of AISI 1018 steel, in accordance with SAE J403, coil stock, 0.036-0.040 inch strip steel. The ring shall have a thickness through the center of 15/32 inch + or - 1/16 inch.

**Wire Bristles.** Wire bristles shall be made of galvanized AISI 1070 steel, in accordance with SAE J403, and ASTM A641 regular coating. The bristles shall be 0.018-0.020 inch diameter. The bristles shall be crimped, with not less than 3 crimps per inch at crimp amplitude of 1/16 inch minimum. The galvanized coating shall be applied at not less than 0.10 ounce per square foot and the tensile strength of the wire shall be in the range of 340,000-350,000 pounds per square inch after crimping.

**Tufts.** Each tuft shall consist of not less than 240 sweeping ends. There shall be 16 tufts per 36 inch brush and 28 tufts per 46 inch brush. All tufts shall be mounted in a cup extending 3-1/2 inches + or - 1/8 inch up the length of the tuft for support.

**Commercial Item Description Guidance.** The General Services Administration guidance, "Federal Standardization Manual," Chapter 6, "Commercial Item Descriptions," July 1995, provides the basic guidance and procedures on the content, format, and language of CIDs. Additional information on developing CID salient characteristics, and quality assurance provisions are located in the Standardization Directive-2, "Buying Commercial and Nondevelopmental Items: A Handbook:," Appendix A, "Preparation and Use of Commercial Item Descriptions," April 1996.

The CID guidance requires the salient characteristics of the product to be stated in terms of function and performance, and not to include product requirements that dictate how to manufacture an item. A CID should only include product characteristics such as dimension, material, and composition, when design control is necessary to meet an interface requirement, such as interchangeability of replacement parts. The two major elements of CIDs are salient characteristics and quality assurance provisions. See Appendix G for guidance on CID characteristics.

### Brush Procurements

DSCC is not procuring the latest rotary sweeper brush technology for snow and ice removal at military airfields. Presently, there are several commercial tufted wire brushes used by commercial airports that are alternatives to the DSCC managed NSNs for brushes. Military airfields are using their local purchase authority to bypass the DoD supply system to purchase more reliable or technologically advanced commercial brushes for runway snow and ice removal.

**Other Commercial Brushes.** There are several versions of rotary sweeper brushes used at commercial airports that provide alternatives to the NSNs purchase description design. For example, one sweeper brush design uses steel wire instead of a retaining pin to attach the wire tufts to the steel rim. The

## **Finding A. Procurement of Commercially Available Items**

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latest commercial tufted brush version uses a slide-in cartridge (wire or polyester brush bristles) that are inserted onto the rotary sweeper broom core. The cartridge design is becoming the industry standard for sweeper brushes used at commercial airports because of durability and reduced maintenance costs.

The Equipment Maintenance Branch Manager, Washington National Airport, stated that it normally requires 12 man-hours to remove and replace tufted brushes from a rotary sweeper broom. In contrast, the tufted brush cartridge version requires only about 1 man-hour to remove and replace the brushes because the broom core is not removed from the sweeper. Appendix D has pictures of the tufted brush and other brush variants.

**Local Purchases.** As a result of quality problems associated with the brush design, military airfields avoid using the tufted brushes in the DoD supply system by using local purchase authority to acquire other commercial brushes. The use of local purchase authority by military installations can result in higher prices because of the lack of competition, and smaller quantity purchases than DSCC procurements.

## **Recommendations, Management Comments, and Audit Response**

We recommend that the Director, Defense Supply Center, Columbus and the Director, Defense Industrial Supply Center, Defense Logistics Agency:

1. Develop and implement commercial item descriptions to purchase all rotary sweeper brushes in accordance with Federal Standardization Manual, Chapter 6, "Commercial Item Descriptions," July 1995.
2. Acquire and test product samples of rotary sweeper brushes that are commercial items before issuing a contract solicitation to vendors.
3. Discontinue use of purchase descriptions when procuring rotary sweeper brushes.

**Principle Deputy Director, Defense Logistics Agency, Comments.** The Principle Deputy Director concurred with Recommendations A.1. and A.3., stating that a Commercial Item Description (CID) is being developed for rotary sweeper tufted steel brushes that have quality problems (NSNs 3825-01-304-0717 and 3825-01-6802). The two NSNs in question were transferred from DSCC to the Defense Industrial Supply Center, Philadelphia, effective March 1, 1997. The CID is expected to be completed in May 1997. In March 1997, the two centers met to coordinate CIDs using customer value contracting for future procurements. The Principal Deputy Director did not agree with Recommendation A.2., stating that testing product samples prior to issuing a solicitation to vendors is not the best method to assure a quality product because the tests could add cost and time to the acquisition process. Instead, the Principal Deputy Director will issue a Quality Assurance Letter of Instruction

## Finding A. Procurement of Commercially Available Items

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and a product verification testing contract clause to ensure quality workmanship. See management comments on Recommendation B.3.. All actions to the recommendations are estimated for completion by September 30, 1997.

**Audit Response.** We consider the Principal Deputy Director, Defense Logistics Agency, comments to Recommendations A.1. and A.3. to be responsive. Regarding Recommendation A.2., the use of a Quality Assurance Letter of Instruction and a product verification testing contract clause to ensure quality workmanship satisfy the intent of the recommendation.

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## **Finding B. Product Quality Deficiency Report**

The Defense Contract Management Command, Springfield investigation on the Product Quality Deficiency Report of Danline tufted brushes delivered under contract SPO770-95-C-3508 was not sufficiently thorough. The review did not include product testing, and screening of current inventory to determine if the brush quality met contract specifications. As a result, defective tufted brushes were delivered and remain in the DoD inventory system.

### **Product Quality Deficiency Report**

On February 14, 1996, the Naval Air Station Keflavik, Iceland (Navy), submitted a Category I Product Quality Deficiency Report (PQDR) on deficient tufted brushes (NSN 3825-01-304-0717) delivered under contract SPO770-95-C-3508. A Category I PQDR documents a deficient product that may cause injury, severe occupational illness, or death. A deficient product could also effect a military mission by causing major damage or loss of a weapons system. The PQDR included exhibits of tufted brushes with improper or missing retaining pins. Also included was a video tape of an operating rotary sweeper that showed a breakdown of tufted brushes with wire bristles becoming imbedded into wood ceiling rafter beams. The Navy cited the following deficiencies:

- o The retaining pins did not penetrate the rim that held the tufts, which caused the entire wire tuft to come loose from the brush rim;
- o The welding of the brush rim occasionally broke apart, causing the entire rim to separate from the rotary sweeper broom;
- o Individual wire strands were not trimmed to equal lengths, causing the strands to tangle in the sweeper broom assembly, tearing out the entire tuft; and
- o The Navy local test and usage data indicated that after 50 hours of operation, 5 to 10 percent of the brush tufts were missing from the broom core.

The Navy stated that these deficiencies posed a dangerous foreign object debris hazard because aircraft engines could ingest the loose tuft wire strands.

**Defense Logistics Agency Guidance.** Defense Logistics Agency Regulation 4155.24, "Product Quality Deficiency Report Program," July 20, 1993, requires a PQDR investigation to include the following:

- o Identify the cause of the problem and the responsible party;
- o Conduct laboratory testing on the nonconforming product;

## Finding B. Product Quality Deficiency Report

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- o Initiate corrective action requests to deter future defects;
- o Alert activities and/or storage depots of any change in status of inventory (that is ready for issue, litigation, etc.); and
- o Inspect existing inventory to determine the extent of defects.

The PQDR program is designed to identify and purge defective products from the DoD inventory, and to provide feedback to contracting officers and contractors.

### Investigation of the Naval PQDR

The Defense Contract Management Command (DCMC), Springfield investigated the Product Quality Deficiency Report of the Danline tufted brushes delivered under contract SPO770-95-C-3508. Although the DCMC investigation identified product quality problems, such as missing or misaligned retaining pins, the investigation also concluded that the tufted brushes failed primarily because the Navy improperly installed and operated the brushes.

**Investigation.** The DCMC concluded that the Navy incorrectly installed the brushes on the broom core. Instead of a steel spacer, brush, steel spacer sequence, the brushes were installed without steel spacers between them. This incorrect procedure resulted in the brushes hitting each other, causing the retaining pin heads to break and release the tufts from the brush rim. The investigation also concluded that the Danline tufted brushes disintegrated because the Navy operated the brush at 800 revolutions per minute, which exceeded the contract purchase description performance requirements of 500 revolutions per minute.

**Navy Specifications for Tufted Brushes.** In a February 6, 1996, memorandum, "Specification for Tufted Wire Brush Filler for Airfield Snow Sweepers at Naval Air Station Keflavik," the Navy defined its tufted brush requirements as 80 operating hours, at a rotational speed of 800 revolutions per minute, without losing a single tuft.

**Performance Requirements for Brushes and Spacers.** Purchase description (PD89VRG23) provides the performance requirements for brushes and spacers for rotary sweepers.

**Brushes.** Performance requirements for brushes are defined as 200 operating hours minimum, at a rotational brush speed of 500 revolutions per minute, with a maximum loss of 2 percent of tufted brush materiel weight.

## **Finding B. Product Quality Deficiency Report**

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**Spacers.** Performance requirements for steel spacers are defined as manufacturer's standard type, made from .045 inch minimum thickness using American Institute of Standards Incorporated (AISI) 1070 steel. Plastic spacers will be manufacturer's standard type made from polypropylene plastic.

In reviewing the Navy video and brush exhibits, the investigators also concluded there was evidence of missing or misaligned retaining pins. These discrepancies were not in conformance with contract terms for the purchase description performance requirements.

**Contractor Changes.** As a result of the PQDR investigation, Danline recommended changes to their manufacturing process to improve the overall quality as follows:

- o Modify the tooling to ensure that retaining pins were aligned and correctly inserted through the tufts;
- o Revise the retaining pin bending procedure;
- o Revise the final assembly inspection to include a tuft pull test to ensure that the wire bristles will not pull out under normal operations;
- o Improve the spot welding of the seams on the brush rim; and
- o Increase the size of the retaining pins with a round head to insure more stability and minimize pin breakage.

Danline also recommended that instructions be included in each box describing installation procedures for brushes and spacers. DSCC has not implemented the contractor's recommendations for a tuft pull test, plastic spacer use, and installation instructions in each box of brushes delivered to customers.

The Navy installed the brushes unaware of their operational limitations, and that steel spacers were required between all the brushes. We believe Danline's suggestion to add instructions in each box has merit. Accordingly, DSCC should modify the contract to require that instructions are added in each box of brushes to describe proper brush installation, and to provide a safety warning that the brush rotational speed be limited to 500 revolutions per minute.

## **Product Testing and Inventory Screening**

Because the investigation concluded that the brush deficiency was limited to Navy operations in Iceland, the investigation did not include screening current inventory, or product testing to determine the extent of nonconformance. Also, the investigation did not determine that the Danline brush quality adhered to contract specifications.



## Finding B. Product Quality Deficiency Report

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**Product Testing for Nonconformance.** Product testing was not used to determine the extent of major nonconformance present in the tufted brush contract. Danline informed the auditors that its tufted brushes have never been independently tested by a commercial or Government laboratory. DSCC waived first article tests on the 1994, 1995, and 1996 Danline contracts. Since 1994, DSCC has purchased 18,360 tufted brushes from Danline.

**Inventory Screening.** DoD depot inventories were not screened to determine the extent of tufted brushes that did not meet contract specifications, but were supplied under the Danline contract. The potentially defective brushes not identified were either issued to DoD customers, or still remain in the DoD inventory.

**PQDR Process Improvement.** A March 31, 1993, DLA Headquarters letter, "Product Quality Deficiency Report (PQDR) Program," to Commanders of DLA Supply Centers provided guidance for improving the PQDR investigation process. The following excerpts are from the enclosure to this letter.

### Testing and inspection related to the investigation of PQDRs.

Testing and inspection are valuable tools in validating complaints and determining the degree of noncompliance and cause of defects. Therefore, test and inspection shall always be considered when the degree, extent, and cause are unknown. This is especially true for critical and major defects. When testing or inspection is not performed in support of a PQDR investigation, the rationale for this decision shall be documented in the final reply and PQDR history file.

### Segregation and screening inspection of product.

Segregation shall be initiated in a timely manner to prevent the issuing of nonconforming material. Segregation of product by NSN/contract shall always be required when the product is considered to have critical or major defects. Segregation is the action to separate some material from the inventory and collect together as a new group, i.e., separation of the material from a specific contract from other material with the same NSN. Screening inspection is the inspection of each item of the product for designated characteristics and removal of nonconforming items.

A Government product test and inventory screening would be appropriate to validate: (1) the quality deficiencies reported by the Navy, (2) Danline's manufacturing process changes, (3) the contract terms, and (4) purchase description requirements.

## Finding B. Product Quality Deficiency Report

### Brush Inventory

Defective tufted brushes were delivered and remain in the DoD inventory system. A screening of current inventory would have identified defective brushes delivered under the Danline contracts. This identification would have enabled the Government to purge the inventory of nonconforming brushes and allow for potential recoupment of contract costs.

**Audit Field Survey.** We conducted a field survey, with the assistance of DCMC personnel, to determine whether other defective tufted brushes were delivered under the 1995 Danline contract. We expanded the survey to include the tufted brushes (NSN 3825-01-321-6802) delivered under the 1996 Danline contract (SPO770-96-C-3531). We included this contract because the brushes were produced after Danline implemented changes to the manufacturing process based on the PQDR investigation.

**1995 Contract.** We examined tufted brushes delivered under the Danline contract (8,275 brushes for \$151,846). We examined 79 brushes from the current inventory at the Defense Distribution Depot, Richmond, Virginia. We identified 41 brushes that have workmanship deficiencies with retaining pins, rims, and spot welding.

**1996 Contract.** We examined tufted brushes delivered under the Danline contract (7,685 brushes for \$232,010). We examined a total of 56 tufted brushes from the current inventory at the Defense Depot, Susquehanna, PA, and the Danline facility, Newark, New Jersey. We identified 31 brushes that have workmanship problems with retaining pins, rims, and spot welding.

The following chart summarizes the results of our examination.

| Examination Results at Selected Locations |                 |                  |                     |
|---|-----------------|------------------|---------------------|
| Location                                  | Number Examined | Number W/Defects | Percent W/Defects * |
| Depot-Richmond                            | 79              | 41               | 52                  |
| Depot-Susquehanna                         | 30              | 15               | 50                  |
| Danline facility                          | 26              | 16               | 62                  |

\*The percentage is the number of defective brushes divided by the brushes examined. The percentage does not represent the total brush inventory.

**Nonconforming Brushes.** The DCMC, Springfield has received and accepted nonconforming brushes from Danline. Supplies are nonconforming when they are defective in material, or workmanship, or are otherwise not in conformity with contract requirements. On September 26, 1996, DSCC directed Defense

## **Finding B. Product Quality Deficiency Report**

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Distribution Depot, Richmond, to reclassify the current inventory of tufted brushes from condition code A (ready for issue) to condition code L (litigation), restricting inventory distribution until the problem is resolved. We did not identify the number of brushes remaining in DoD inventory.

The excerpt from Defense Federal Acquisition Regulation, part 246.407, "Nonconforming Supplies and Services," February 29, 1996, prescribes procedures for nonconforming material or services if discovered after acceptance by the Government as follows:

The defect appears to be the fault of the contractor, any warranty has expired, and there are no other contractual remedies, the contracting officer --

(i) Shall notify the contractor in writing of the nonconforming material or service;

(ii) Shall request the contractor repair or replace the material, or perform the service at no cost to the government; and

(iii) May accept consideration if offered.

As required by this guidance, the Government has not received consideration from Danline for nonconforming brushes that do not adhere to the contract terms.

## **Recommendations, Management Comments, and Audit Response**

We recommend that the Commander, Defense Supply Center, Columbus, Defense Logistics Agency:

1. Initiate an inspection of all current inventory to identify nonconforming tufted brushes delivered under Danline, Incorporated contracts SPO770-95-C-3508 and SPO770-96-C-3531 .

2. Request consideration from Danline, Incorporated for nonconforming tufted brushes identified through inventory inspection.

3. Initiate a product laboratory test on the Danline, Incorporated tufted brush to ensure that the product conforms to the contract provisions.

4. Alert DoD military airfields on the operational limitations of Danline tufted brushes for snow and ice removal applications.

5. Modify future contracts to require contractors to include instructions for installing and operating brushes on rotary sweepers.

## **Finding B. Product Quality Deficiency Report**

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**Principle Deputy Director, Defense Logistics, Agency Comments.** The Principle Deputy Director concurred with Recommendations B.1., B.2., B.3., and B.4., stating that all recommended actions will be completed by September 30, 1997. The Defense Logistics Agency depot stock of the tufted brushes for the two Danline contracts were sent to the Product Testing Center at Columbus. As a result of laboratory test failures, a Product Quality Deficiency Report was initiated for each contract and forwarded to the Defense Contract Management Command, Springfield, NJ, and Danline for investigation. If the Product Quality Deficiency Report investigation determines that Danline is responsible for the defective tufted brushes, then Government negotiations for consideration will occur at that time. DSCC quality assurance and Defense Contract Management Command personnel are coordinating their efforts to insure that in-process inspections will be made while the brush is being manufactured by issuing a Quality Assurance Letter of Instruction to require inspections of Danline's specific manufacturing processes. In addition, the Principle Deputy Director also intends to request that a product verification testing clause be added to the contract to require laboratory tests to ensure vendor quality workmanship if in-process inspection does not verify that a quality product is being delivered to the Government. A safety alert will be issued to customers identified in the requisition history files that received Danline tufted brushes. Regarding Recommendation B.5., the Principal Deputy Director stated that instructions for installing and operating brushes are normally supplied with the end item. The Defense Industrial Supply Center and the DSCC are assessing the necessity of providing installation instructions with brushes issued to their customers.

**Audit Response.** Comments made by the Principal Deputy Director, Defense Logistics Agency, are responsive. Actions being taken by issuing a Quality Assurance Letter of Instruction and a product verification testing contract clause to ensure quality assurance meets the intent of the recommendation. Acquiring commercial items, such as brushes and rotary sweepers, with technical data and instructions meets the intent of Recommendation B.5. As discussed in Finding B., Danline has recommended that each box of brushes include instructions for installing their brushes on rotary sweeper brooms. This action would provide an added safety feature because of the different types of commercial rotary sweepers that could have Danline brushes installed and operated under various field conditions.

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## Finding C. Quality Assurance Oversight

The DCMC, Springfield quality assurance oversight of the Danline contracts was inadequate. Inadequate oversight occurred because DCMC, Springfield quality assurance representatives (QAR) did not correctly assess Danline's process risk for manufacturing tufted brushes that met the required performance characteristics. In addition, DSCC did not classify the tufted brushes as a critical item needing additional quality assurance oversight. As a result, the Military Services have received nonconforming tufted brushes and military users are rejecting the nonconforming tufted brushes.

### Quality Assurance Guidance

**Federal Acquisition Regulation.** The FAR establishes policies and procedures along with specific quality assurance requirements to assure that the Government receives what is ordered. The FAR, part 46, "Quality Assurance," prescribes policies and procedures for ensuring that contracted supplies meet quality standards. According to FAR, part 46, the contractor is responsible for controlling quality, while tendering to the Government supplies that conform to contract requirements, in addition to maintaining documentation that the supplies conform to contract requirements.

**Contract Inspection and Acceptance Requirements.** Quality assurance requirements were incorporated into the fixed-price contracts for buying Danline tufted brushes. The contracts state that FAR 52.246-2, "Inspection of Supplies-Fixed Price," is the principal clause establishing Danline's obligation to provide an inspection system for the brushes it manufactures. This clause places the primary obligation for delivering conforming supplies on Danline, while reserving Government inspection and acceptance rights. The FAR does not prescribe a specific inspection system for Danline or the Government.

**The Goal of Quality Assurance.** The goal of government quality assurance is to ensure that the DoD supply system receives conforming supplies for military customers. If DCMC, Springfield accepts a nonconforming product, quality assurance has not been effective.

### Quality Assurance

The DCMC, Springfield quality assurance oversight for the Danline contracts was insufficient for the degree of contract risk. Evidence of inadequate oversight was provided by:

- o an examination of the Danline brushes,

## Finding C. Quality Assurance Oversight

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- o the PQDR discussed in Finding B, and
- o the number of manufacturing changes and QAR initiatives after the Navy PQDR.

**Brush Examination.** We identified nonconforming brushes accepted by DCMC Springfield (See Finding B). For the 1996 contract, we examined 26 tufted brushes at the contractor plant that were ready for packing and shipping, which DCMC, Springfield had not accepted. We identified 16 brushes (62 percent) with retaining pin or rim deficiencies that had passed Danline's self-inspection process. Appendix F provides information on the Government procurement history of rotary brushes since 1993.

**Post PQDR Activity.** On April 16, 1996, the QAR wrote a memorandum to Danline proposing a continuous improvement opportunity for manufacturing the brush ring. The QAR also wrote a "Facility/Surveillance Plan," April 24, 1996. Included in the plan was a description of the manufacturing process and a risk assessment of critical processes. On June 4, 1996, Danline responded to the continuous improvement opportunity and stated that it was implementing the QAR proposal. On July 26, 1996, the QAR notified Danline that its retaining pin process needed improvement and gave Danline five days to correct the process. In yet another action, the QAR asked Danline to screen an entire shipment and remove nonconforming brushes. During a process audit on August 8, 1996, the QAR discovered that Danline had mixed nonconforming and conforming brushes for shipment to Defense supply depots. These actions showed more aggressive QAR oversight of the Danline contract, yet they have not sufficiently reduced the risk of receiving nonconforming tufted brushes.

**Danline's Inspection Program.** The contracts did not require that Danline have a written plan for its inspection system, but the contracts required Danline to maintain records of all inspections. Based on interviews with Danline and DCMC Springfield officials, Danline did not have a formal, written quality assurance plan. Danline was documenting inspection samplings from daily production. Danline inspections relied entirely on visual examinations. Danline did not perform any measurements or other quality assurance tests, such as a tufted pull test to ensure proper settings of the retaining pin.

## Process Risks

Insufficient oversight occurred because DCMC, Springfield QAR did not correctly assess Danline's process risk for manufacturing tufted brushes that met the required performance characteristics. Defense Logistics Agency QAR guidance states, "The type, intensity, and frequency of surveillance shall vary directly with the process risk." The DCMC, Springfield quality assurance program should have been more comprehensive because of the risks created by:

- o Danline having no prior experience in manufacturing a brush that used a retaining pin to hold each tuft to the brush ring,

## Finding C. Quality Assurance Oversight

---

- o DSCC having waived first article tests on Danline contracts for tufted wire brushes, and

- o Danline having brush manufacturing processes that were not dependable.

**Critical Item.** In addition, DSCC did not correctly classify the tufted brush as a critical item. Critical items require more stringent quality oversight by the Government. FAR, part 46, defines critical as an item in which the failure could injure personnel or jeopardize a vital agency mission. The Navy PQDR stated that the failure of the brushes "posed a dangerous foreign object damage situation whereby aircraft engines could ingest the loose tuft strands." The Navy video tape showed bristles sticking to ceiling beams after being thrown from the brush assembly because of missing retaining pins. The nonconforming brushes clearly constituted a danger to personnel.

**Danline's Experience.** Before award of the 1994 contract, Danline had not manufactured a tufted brush using retaining pins to hold the tufts to the rim. The tufted brushes that Danline had manufactured held the tufts to the rim with a wrapped wire. Danline had to change its processes to manufacture a brush with the design required by the DSCC purchase description. Manufacturing the brushes using new processes causes risk of nonconforming brushes to increase.

**First Article Testing.** DSCC initially waived a first article test for the Danline brush after awarding the 1994 contract. Subsequent contracts, awarded in 1995 and 1996, also waived first article tests. The Government waived the 1995 and 1996 test requirements because of the precedent of the 1994 contract. The FAR states that one indicator of good quality is no first article test failures. Another indicator is the result of laboratory testing in a Government or contract laboratory. The decision to waive the first article test increased the risk that the brushes would have quality defects.

**Manufacturing Processes.** Danline manufactured the tufted brush with labor intensive processes that were dependent on consistent operator performance to produce a quality product. The limitations of these labor intensive processes were apparent when comparing Danline's commercial brush manufacturing processes, which were more automated and less operator dependent, with processes used to manufacture the Government brushes. The Danline processes employed several steps primarily controlled by the operator. These processes increased the opportunities for operator error while manufacturing the brush. The manufacturing processes created the most significant risk that the brushes would not meet contract requirements.

Danline improved manufacturing processes after the Navy submitted a PQDR, but the manufacturing processes still had increased risks of producing nonconforming brushes. Danline proposed several process changes in its response to the PQDR investigation (Finding B discusses these process changes in detail).



## **Tufted Brush Inventory**

**Customer Reaction.** The Military Services were not getting what DSCC ordered because Danline was delivering nonconforming brushes against the 1995 and 1996 contracts. Because the brushes were nonconforming, users were buying their brushes from other commercial vendors rather than acquiring the brushes from the DoD supply system.

**Safety.** The primary reason military customers were rejecting Danline tufted brushes was for safety reasons. Customer safety concerns included the danger that the loss of the tufts from operating sweepers posed a hazardous risk to both aircraft (the tufts could be ingested into jet engines) and to personnel.

## **Recommendations, Management Comments, and Audit Response**

We recommend the Commander, Defense Contract Management Command, Springfield, Defense Logistics Agency, quality assurance representatives inspect all future deliveries of Danline tufted brushes, before acceptance, until Defense Supply Center, Columbus changes the brush design, Danline improves its manufacturing processes, or the Government purchases the brushes using a commercial item description.

**Principle Deputy Director, Defense Logistics Agency, Comments.** The Principle Deputy Director concurred with the recommendation that a quality assurance representative should inspect Danline manufacturing process prior to acceptance of the brushes by the Government. The pre-PQDR quality assurance oversight of Danline manufacturing process was minimal. Action was to be completed by April 17, 1997.



## **Part II - Additional Information**

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## **Appendix A. Scope and Methodology**

### **Scope**

We examined Danline and United Rotary Brush Corporation contracts, rotary brush materiel management data, and quality assurance documentation for Danline contracts. We reviewed the DSCC award of contracts SP0770-94-C-4013, SP0770-95-C-3508, and SP0770-96-C-3531, totaling \$462,072, to Danline for the procurement of rotary sweeper tufted brushes. We reviewed DSCC contract documents regarding first article testing to determine whether DSCC properly waived first article testing. We also conducted visits to Danline and United Rotary Brush Corporation plants to observe their manufacturing processes for tufted brushes.

We evaluated the DCMC Springfield contract administration process as it related to tufted rotary brushes. We reviewed the DCMC quality assurance reports to determine whether DCMC provided adequate quality assurance oversight and properly accepted Danline tufted brushes produced under the 1994 and 1995 contracts. We also reviewed DCMC documentation and the Navy video tape related to the Product Quality Deficiency Report investigation of the 1995 Danline contract. We reviewed the Product Quality Deficiency Report, DCMC recommendations, Danline statements concerning the deficiency, and DSCC follow-up actions to determine whether DCMC and DSCC adequately resolved the issue.

We visited Washington National and Dulles International airports to determine the type of commercial brushes they use for runway snow and ice removal. We reviewed their requirements and purchasing procedures for airport brushes for comparison with DSCC methods. We also examined the latest rotary sweeper brush designs to determine whether the Military Departments are using up-to-date equipment.

Finally, we visited two DoD depots to determine whether DSCC took appropriate measures to ensure defective brushes were purged from DoD inventory. We did not evaluate the management control program or the use of performance indicators because of the limited scope of the allegations.

### **Audit Period and Standards**

We conducted this economy and efficiency audit from August 15, 1996 through January 17, 1997, in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. We did not use computer-processed data or statistical sampling procedures for this audit.

## **Organizations Visited or Contacted**

During the audit, we obtained audit information for rotary sweeper brushes by visiting and contacting Government and commercial personnel. We visited the Deputy Under Secretary of Defense (Industrial Affairs and Installation) and Headquarters, Defense Logistics Agency. The principal locations were the Defense Supply Center, Columbus, Ohio, and the Defense Contract Management Command, Springfield, NJ. We also visited the Defense Distribution Depot, Richmond, VA, and Naval Inventory Control Point, Mechanicsburg, PA. We contacted military installations in Elmendorf, Alaska; Keflavik, Iceland; Misawa, Japan; Grand Forks, North Dakota; McChord, Washington; and Camp Douglas, Wisconsin. We also visited the following contractor facilities: Danline at Kenilworth, NJ, and United Rotary Brush Corporation at Marysville, Ohio. In addition, we visited Dulles International Airport and Washington National Airport both located in Virginia.

## **Prior Audits and Other Reviews**

There were no prior audits or reviews of tufted brush refills for rotary broom sweepers used at military airfields.

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## **Appendix B. Contractor Allegations**

**Allegation 1. DSCC improperly awarded the 1996 contract (SPO770-96-C-3531) to Danline because Danline had not demonstrated its ability to manufacture tufted brush refills with a 19-1/2 inch diameter specification.**

**Audit Results.** The allegation was not substantiated. Although Danline had not made 19-1/2-inch diameter tufted brushes, it demonstrated the ability to manufacture tufted brushes prior to the award of the 1996 contract by DSCC. Danline manufactured 10-3/4-inch diameter tufted brushes in two DSCC contracts awarded in 1994 and 1995. The same manufacturing process is used for both the 10-3/4 and 19-1/2 inch brushes. Furthermore, prior to the 1996 contract award, there were no complaints or problems noted with Danline brushes. Based on the information available at the time of the award, we believe the contracting officer made an appropriate award. Appendix F is the procurement history of rotary brushes for contract years 1993 through 1996.

**Allegation 2. DSCC improperly waived first article testing on contract SPO770-96-C-3531 to Danline, Inc.**

**Audit Results.** The allegation was not substantiated. DSCC waived first article testing on the 1996 contract because: the 19-1/2-inch diameter tufted brush uses the same manufacturing process as the 10-3/4-inch tufted brush and DSCC waived first article testing on prior 1994 and 1995 Danline contracts. The contract provisions allow DSCC to waive first article testing when the procurement officer finds it in the best interest of the Government. In this case, Danline had already demonstrated its ability to manufacture the brushes at that point in time, and any additional testing would have resulted in a cost to the Government. Therefore, we believe that DSCC made the proper decision to waive first article testing.

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## Appendix C. Purchase Descriptions

**Continuous, Flat Ring, Wire Wafer (Brush):** The brush shall be a flat ring filled with wire bristles formed of galvanized American Institute of Standards Incorporated (AISI) 1070 Steel. The 10-3/4-inch inside diameter brush shall have at least one drive pin protruding 1/2 inch to 9/16 inch from the ring. The 19-1/2-inch inside diameter brush shall have not less than four drive pins. Each pin shall protrude at least 1/4 inch from the ring. The pins shall be 15-1/2 inches apart center to center. There is a purchase description for a continuous, flat ring, 10-3/4-inch diameter wire brush with the same specifications, except for heavier wire.

**Continuous, Flat Ring, Plastic Brush:** The brush shall be a flat ring filled with plastic bristles formed of virgin polypropylene strands. The 10-3/4-inch inside diameter brush shall have one drive pin protruding 1/2 to 9/16 inches from the ring. The 19-1/2-inch inside diameter brush shall have not less than four drive pins. Each pin shall protrude at least 1/4 inch from the ring. The pins shall be 15-1/2 inches apart center to center.

**Continuous, Convoluted Ring, Wire Brush:** The brush shall be a convoluted ring filled with wire bristles formed of galvanized AISI 1070 steel. The brush shall have at least two drive pins protruding 1/2 inch to 9/16 inches from the ring and spaced 1-7/16 inches to 1-9/16 inches apart center to center. There is a purchase description for a continuous, convoluted ring, 10-3/4-inch diameter wire brush with the same specifications, except for heavier wire.

**Continuous, Convoluted Ring, Plastic Brush:** The brush shall be a convoluted ring filled with plastic bristles formed of virgin polypropylene strands. The brush shall have at least two drive pins protruding 1/2 inch to 9/16 inches from the ring and spaced 1-7/16 inches to 1-9/16 inches apart center to center.

**Tufted Wire Brush:** The brush shall be a flat ring with wire bristles. The wire shall be formed of galvanized AISI 1070 steel and formed into "tufts". Each tuft shall consist of not less than 120 single wires doubled over in a U shape to form 240 sweeping ends. Individual tufts shall be inserted into a steel cup. There shall not be less than 16 cups per rim. A 0.115 inch minimum diameter steel pin will be inserted completely through the cup and the U sections of each tuft. The pin shall have a formed "bead" at one end to prevent it from sliding through the cup and shall be bent at a 90 degree plane at the other end to secure the tuft in the cup. The cup shall be lined with rubber, and a damper ring formulated of the same materials shall be molded to the liner to form a one piece unit. The damper ring shall be 1/2 inch wide by 3/16 inch thick minimum and shall have an inside diameter of 3/4 inch minimum.

**Tufted Wire Strip:** The strip shall be formed from .036 to .049 inch thick AISI 1070 steel into a channel 27-5/8 inches long by 1-5/8 inch wide by 1/8 inch minimum thickness. Each strip shall be filled with wire bristles formed of galvanized AISI 1070 steel. Each tuft shall consist of not less than 120 single wires doubled over in a U shape to form 240 sweeping ends. The

## Appendix C. Purchase Descriptions

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wire shall be formed into tufts as specified in the purchase description for a tufted wire brush and shall have an 11-1/2 inch bristle length minimum. There shall not be less than 17 tufts per strip. Each tuft shall have an individual, one-piece, rubberized tubing cup and damper ring assembly as specified in the description for a tufted wire brush. The channel shall be smooth, free from extrusions with retaining wires and protrusions for quick and easy installation. Each tuft shall be held on the strip by a separate retaining pin as specified in the description for a tufted wire brush.

**Tufted Plastic Strip:** The strip shall be formed from .036 to .049 inch thick AISI 1070 steel into a channel 27-5/8 inches long by 1-5/8 inch wide by 1/8 inch minimum thickness. Each strip shall be filled with plastic strands formed of virgin polypropylene. The strands shall be crimped and formed into tufts with not less than 14 strands per tuft and with an 11-1/2 inch minimum bristle length. There shall be not less than 17 tufts per strip. Each tuft shall have an individual, one-piece, rubberized tubing cup and damper ring assembly as specified in the description for a tufted wire strip. The tufts shall be held on the strip by a .080 inch diameter galvanized AISI 1070 steel.

**Spacers (Steel):** The spacers for brush sections shall be manufacturer's standard type and shall be made from .045 inch minimum thickness AISI 1070 steel.

**Spacers (Plastic):** The spacers for brush sections shall be manufacturer's standard type and shall be polypropylene plastic.

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## Appendix D. National Stock Numbers (NSN)

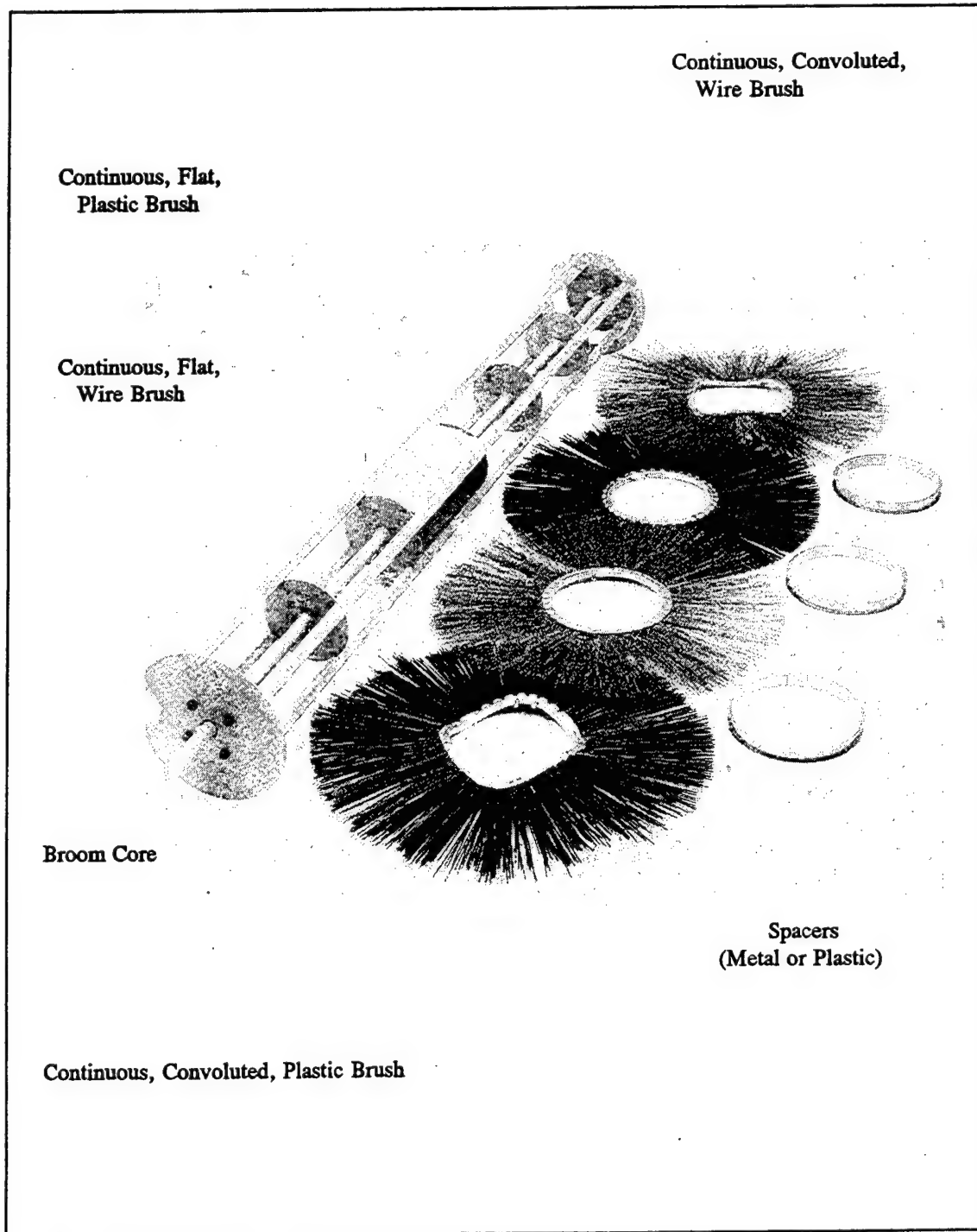
### Rotary Sweeper Brush

| <u>NSN</u>                                  |       | <u>Description</u>                           |
|---|-------|--|
| <b>19.5" by 46" Brush Size<sup>1</sup></b>  |       |  |
| 3825-01-321-6802                            | 19.50 | Tufted Wire Section                          |
| 3825-01-304-0715                            | 19.50 | Flat Continuous Wire Section                 |
| 3825-01-304-0716                            | 19.50 | Flat Continuous Polyester Section            |
| <b>10.75" by 36" Brush Size<sup>1</sup></b> |       |  |
| 3825-01-304-6803                            | 10.75 | Convolute Continuous Wire Section            |
| 3825-01-304-0712                            | 10.75 | Flat Continuous Wire Section                 |
| 3825-01-304-0713                            | 10.75 | Flat Continuous Polyester Section            |
| 3825-01-304-0714                            | 10.75 | Convolute Continuous Polyester Section       |
| 3825-01-304-0717                            | 10.75 | Tufted Wire Section                          |
| 3825-01-304-0720                            | 10.75 | Convolute Continuous Heavy Duty Wire Section |
| 3825-01-304-0721                            | 10.75 | Flat Continuous Heavy Duty Wire Section      |
| <b>Tufted Strips Airport Sections</b>       |       |  |
| 3825-01-304-0718                            |       | Strips Tufted Wire                           |
| <b>Spacers</b>                              |       |  |
| 3825-01-323-0126                            | 10.75 | Steel for Continuous Flat                    |
| 3825-01-323-3696                            | 19.50 | Steel for Continuous Flat                    |
| 3925-01-321-7021                            | 10.75 | Steel for Tufted                             |
| 3825-01-321-7022                            | 19.50 | Steel for Tufted                             |

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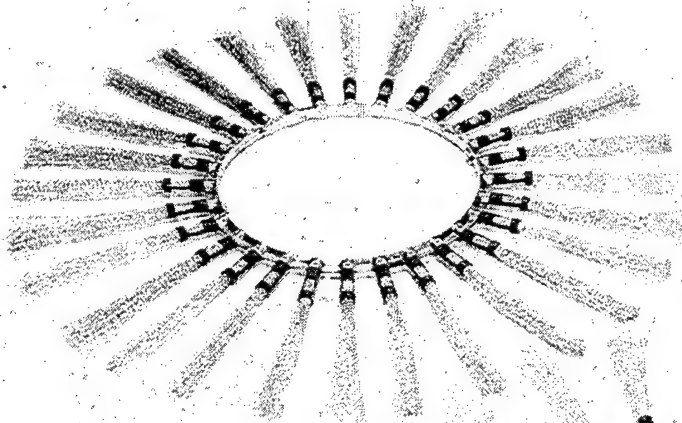
<sup>1</sup>Measurements indicate the inside and outside dimensions of the brushes.

## Appendix E. Rotary Brush Pictures

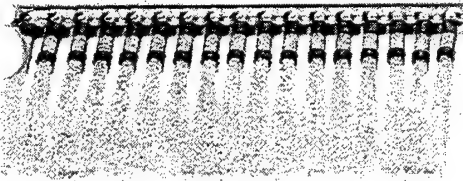
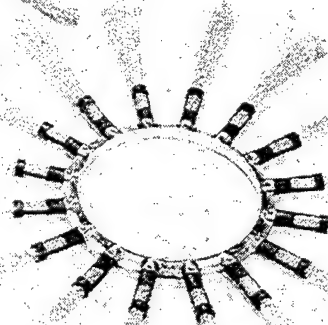




Tufted Wire Brush  
19-1/2"



Tufted Wire Brush  
10-3/4"



Tufted Strip Brush  
(Plastic or Wire)

## Appendix E. Rotary Brush Pictures

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Commercial  
Sweeper



Tufted Wire Brush

## Appendix F. Procurement History of Rotary Brushes for Contract Years 1993 through 1996

| National Stock<br>Number | Item Description                            | Contractor        | Quantity      | Contract<br>Total   |
|--------------------------|---|-------------------|---------------|---------------------|
| 3825-01-321-6802         | 19.5 Tufted Wire Section                    | Danline           | 7,685         | \$232,010.15        |
| 3825-01-304-0715         | 19.5 Flat Continuous Wire Section           | United            | 2,386         | 47,767.72           |
|                          |   | United            | 2,500         | 44,875.00           |
|                          |   | United            | 702           | 16,812.90           |
|                          |   | Sweepster Jenkins | 250           | 5,380.00            |
| 3825-01-304-0716         | 19.5 Flat Continuous Poly Section           | Danline           | 1,500         | 24,525.00           |
| 3825-01-304-0712         | 10.75 Flat Continuous Wire Section          | United            | 225           | 2,463.75            |
|                          |   | Danline           | 1,550         | 16,445.50           |
|                          |   | Danline           | 3,110         | 32,934.90           |
|                          |   | Sweepster Jenkins | 1,200         | 11,568.00           |
|                          |   | United            | 950           | 9,158.00            |
| 3825-01-304-0713         | 10.75 Flat Continuous Poly Section          | United            | 1,525         | 12,535.50           |
|                          |   | Sweepster Jenkins | 2,000         | 16,300.00           |
|                          |   | United            | 1,150         | 9,453.00            |
|                          |   | United            | 200           | 1,644.00            |
|                          |   | United            | 100           | 1,500.00            |
|                          |   | Sweepster Jenkins | 125           | 1,523.75            |
| 3825-01-321-6803         | 10.75 Convoluted Continuous Wire Section    | Sweepster Jenkins | 75            | 888.75              |
| 3825-01-304-0720         | 10.75 Convoluted Continuous HD Wire Section | Danline           | 4,202         | 52,525.00           |
|                          |   | Sweepster Jenkins | 2,125         | 24,246.25           |
| 3825-01-304-0721         | 10.75 Flat Continuous HD Wire Section       | United            | 4,350         | 59,769.00           |
|                          |   | United            | 50            | 798.00              |
| 3825-01-304-0717         | 10.75 Tufted Wire Section                   | Danline           | 2,400         | 78,216.00           |
|                          |   | United            | 425           | 9,209.75            |
|                          |   | United            | 850           | 18,419.50           |
|                          |   | Danline           | 8,275         | 151,846.25          |
|                          |   | United            | 525           | 9,623.25            |
|                          |   | United            | 625           | 11,381.25           |
|                          |   | United            | 1,075         | 19,823.00           |
| <b>Total</b>             |   |                   | <b>52,135</b> | <b>\$923,643.17</b> |

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## Appendix G. Commercial Item Description Characteristics

**Salient Characteristics.** Salient characteristics are an important technical aspect of an item that provides a definitive basis for the item's acceptance or rejection by the Government. The salient characteristics are based on two sources: information on the item users' overall requirements and information from market research.

**Operational Requirements.** Market research that involves item user requirements is the method used to determine operational requirements. Performance specifications translate operational requirements into technical language that tells the product manufacturers: (1) what the customer will consider as an acceptable product and (2) how the customer will determine if the product is acceptable. In developing a performance specification, the user's actual product need and technical characteristics are determined.

**Market Research.** Market research provides information on existing products, technology, and product performance and quality.

**Quality Assurance.** Quality assurance requirements that are consistent with the commercial practice for an item should be used in a CID. Quality assurance of an item includes three areas: product samples, testing and inspection, and commercial market acceptance.

**Product Samples.** Product samples provide the Government with knowledge of an item before a contract solicitation is offered to a vendor. A sample can be used to:

- o verify manufacturer's claim regarding performance and quality,
- o test for effectiveness in a military environment, and
- o evaluate against source selection criteria.

**Testing and Inspection.** CID testing and inspection requirements are tailored toward verifying the salient characteristics of the items. Accepted commercial industry test methods should be used when available.

**Market Acceptance.** The commercial market acceptance criteria uses established factors to determine whether an item is accepted in the commercial market. For example, the number of units that have been sold, the period of time the item has been available for sale, and the reliability and performance of the item such as percentage of returns under warranty are a few of these factors.

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## **Appendix H. Report Distribution**

### **Office of the Secretary of Defense**

Under Secretary of Defense (Comptroller)  
Deputy Comptroller (Program/Budget)  
Under Secretary of Defense for Acquisition and Technology  
Deputy Under Secretary of Defense (Industrial Affairs and Installations)  
Deputy Under Secretary of Defense (Logistics)  
Director, Defense Procurement  
Director, Defense Logistics Studies Information Exchange  
Assistant Secretary of Defense (Public Affairs)

### **Department of the Army**

Auditor General, Department of the Army

### **Department of the Navy**

Assistant Secretary of the Navy (Financial Management and Comptroller)  
Auditor General, Department of the Navy

### **Department of the Air Force**

Assistant Secretary of the Air Force (Financial Management and Comptroller)  
Auditor General, Department of the Air Force

### **Other Defense Organizations**

Director, Defense Contract Audit Agency  
Director, Defense Logistics Agency  
Director, National Security Agency  
Inspector General, National Security Agency  
Inspector General, Defense Intelligence Agency

## **Appendix H. Report Distribution**

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### **Non-Defense Federal Organizations and Individuals**

Office of Management and Budget  
Technical Information Center, National Security and International Affairs Division,  
General Accounting Office

Chairman and ranking minority member of each of the following congressional committees and subcommittees:

Senate Committee on Appropriations  
Senate Subcommittee on Defense, Committee on Appropriations  
Senate Committee on Armed Services  
Senate Committee on Governmental Affairs  
House Committee on Appropriations  
House Subcommittee on National Security, Committee on Appropriations  
House Committee on Government Reform and Oversight  
House Subcommittee on Government Management, Information, And Technology,  
Committee on Government Reform and Oversight  
House Subcommittee on National Security, International Affairs, and Criminal  
Justice, Committee on Government Reform and Oversight  
House Committee on National Security

## **Part III - Management Comments**

# Defense Logistics Agency Comments



DEFENSE LOGISTICS AGENCY  
HEADQUARTERS  
8725 JOHN J. KINGMAN ROAD, SUITE 2533  
FT. BELVOIR, VIRGINIA 22060-6221

IN REPLY  
REFER TO DDAI

131 MAR 1997

MEMORANDUM FOR ASSISTANT INSPECTOR GENERAL FOR AUDITING  
DEPARTMENT OF DEFENSE

SUBJECT: Draft Report on Contract for Rotary Sweeper Broom  
Refills for Airport Snow Removal (Project No. 6CF-5050)

This is in response to your February 21, 1997 request. For  
any questions, call Elaine Parker, (703)767-6264.

A handwritten signature in cursive script, reading "Oliver E. Coleman".

Encl

OLIVER E. COLEMAN  
Acting Chief, Internal Review Office



**SUBJECT:** Audit Report on Contract for Rotary Sweeper Broom Refills for Airport Snow Removal (Project No. 6CF-5050)

**FINDING A:** Procurement of Commercially Available Items.

The Defense Supply Center, Columbus (DSCC) use of purchase description requirements to procure rotary sweeper tufted brushes limits the type and quality of brushes available for military airfields. These limitations occurred because DSCC had not developed a performance based commercial item description to replace the purchase description used to procure brushes. As a result, DSCC is not procuring the latest rotary sweeper brush technology for snow and ice removal at military airfields.

**DLA COMMENTS:** Concur. Corrective actions are being taken. The specific corrective actions are explained in our comments to the remaining recommendations.

**INTERNAL MANAGEMENT CONTROL WEAKNESS:** Concur; weakness will be reported in the DLA Annual Statement of Assurance.

**ACTION OFFICER:** Catherine Heretick, MMPOA, (703)767-1361, March 24, 1997

**REVIEW/APPROVAL:** Robert L. Molino, Executive Director, MMP, March 24, 1997

**COORDINATION:** Oliver E. Coleman, DDAI, 767-6464  
*Oliver Coleman 28 MAR 97*

**DLA APPROVAL:**

*Ray E. McCoy*

(signed)  
Ray E. McCoy  
Deputy Director, DDAI  
Defense Logistics Agency

## Defense Logistics Agency Comments

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**SUBJECT:** Audit Report on Contract for Rotary Sweeper Broom Refills for Airport Snow Removal (Project No. 6CF-5050)

**RECOMMENDATION No. A1:** We recommend that the Director, Defense Supply Center, Columbus and the Director, Defense Industrial Supply Center, Defense Logistics Agency develop and implement commercial item descriptions to purchase all rotary sweeper brushes in accordance with Federal Standardization Manual, Chapter 6, "Commercial Item Descriptions," July 1995.

**DLA COMMENTS:** Concur. A performance based Commercial Item Description (CID) is being developed for the flat ring, tufted, steel fillers for rotary sweepers, NSNs 3825-01-304-0717 and 3825-01-321-6802. These are the two NSNs that have the quality problems. The CID format and general content has been approved by the Program Analyst (Christine Metz) for the Nondevelopmental Item Program in the Office of the Assistant Secretary of Defense. The CID is expected to be completed in April 1997. DSCC and DISC have been exploring the possibility of developing CIDs for the other rotary sweeper brushes and procuring to the CID using Customer Value Contracting (CVC). This will allow the customers to order from the manufacturer of choice.

**DISPOSITION:** Action is ongoing. ECD: May 30, 1997

**ACTION OFFICER:** Catherine Heretick, MMPOA, (703)767-1361, March 24, 1997

**REVIEW/APPROVAL:** Robert L. Molino, Executive Director, MMP, March 24, 1997

**COORDINATION:** Oliver E. Coleman, DDAI, 767-6272

*Oliver Coleman 28 MAR. 97*

**DLA APPROVAL:**

*E. J. McCoy*

(signed)  
E. J. MCCOY  
Major General, USA  
Principal Deputy Director

**SUBJECT:** Audit Report on Contract for Rotary Sweeper Broom Refills for Airport Snow Removal (Project No. 6CF-5050)

**RECOMMENDATION NO. A2:** We recommend that the Director, Defense Supply Center, Columbus and the Director, Defense Industrial Supply Center, Defense Logistics Agency acquire and test product samples of rotary sweeper brushes that are commercial items before issuing a contract solicitation to vendors.

**DLA COMMENTS:** Concur that it is important to assure the quality of the items for our customers. However, we do not believe that acquiring and testing samples prior to issuing a solicitation to vendors is the best method to assure a quality product. It could add cost and time to the process. FAR Part 12 requires the Government to rely on a contractor's commercial processes and warranties. Proper market research and source selection criteria should insure only reputable concerns receive awards. Making new purchases with the Commercial Item Description (CID) and using Customer Value Contracting (CVC) will allow current manufacturers to supply their quality products. Since, the item management of these products is being transferred from DSCC to DISC, both Inventory Control Points are coordinating their efforts. The considerations for assuring quality are further defined in our response to Finding B, Recommendation 3.

**DISPOSITION:** Action is considered complete.

**ACTION OFFICER:** Catherine Heretick, MMPOA, (703)767-1361, March 24, 1997

**REVIEW/APPROVAL:** Robert L. Molino, Executive Director, MMP, March 24, 1997

**COORDINATION:** Oliver E. Coleman, DDAI, 767-6272

**DLA APPROVAL:**

*Oliver E. Coleman 28 MAR 97*

*[Signature]*

(signed)  
PAUL E. MCCOY  
Major General, USA  
Principal Deputy Director

## Defense Logistics Agency Comments

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**SUBJECT:** Audit Report on Contract for Rotary Sweeper Broom Refills for Airport Snow Removal (Project No. 6CF-5050)

**RECOMMENDATION NO. A3:** We recommend that the Director, Defense Supply Center, Columbus and the Director, Defense Industrial Supply Center, Defense Logistics Agency discontinue use of purchase descriptions when procuring rotary sweeper brushes.

**DLA COMMENTS:** Concur. The two NSNs in question were transferred from DSCC to DISC, effective 1 March 1997, as part of the BRAC 95 logistic reassignment of FSCs. DSCC and DISC met 20 March 1997 to coordinate Commercial Item Descriptions (CIDS) using Customer Value Contracting (CVC) for future procurements. DSCC has one procurement in process, under a Cage and Part Number for the wire secured type brush. The quality considerations for this procurement are further defined in DSCC's response to Finding B, Recommendation 3.

**DISPOSITION:** Action is ongoing. ECD: June 30, 1997

**ACTION OFFICER:** Catherine Heretick, MMPOA, (703)767-1361, March 24, 1997

**REVIEW/APPROVAL:** Robert L. Molino, Executive Director, MMP, March 24, 1997

**COORDINATION:** Oliver E. Coleman, DDAI, 767-6464

**DLA APPROVAL:**

*Oliver E. Coleman 28 MAR 97*

*[Signature]*

(signed)  
RAY E. MCCOY  
Major General, USA  
Principal Deputy Director

**SUBJECT:** Audit Report on Contract for Rotary Sweeper Broom Refills for Airport Snow Removal (Project No. 6CF-5050)

**FINDING B:** Product Quality Deficiency Report.

The Defense Contract Management Command, Springfield investigation was not complete on the Product Quality Deficiency Report of Danline tufted brushes delivered under contract SPO770-95-C-3508. An incomplete investigation occurred because the investigation did not include product testing, and screening of current inventory to determine if the brush quality met contract specifications. As a result, defective tufted brushes were delivered and remain in the DoD inventory system.

**DLA COMMENTS:** Concur. Corrective actions are discussed in the comments to the specific recommendations.

**INTERNAL MANAGEMENT CONTROL WEAKNESS:** Concur; weakness will be reported in the DLA Annual Statement of Assurance.

**ACTION OFFICER:** Catherine Heretick, MMPOA, (703)767-1361, March 24, 1997

**REVIEW/APPROVAL:** Robert L. Molino, Executive Director, MMP, March 24, 1997

**COORDINATION:** Oliver E. Coleman, DDAI, 767-6464

*Oliver Coleman 28 MAR 97*

**DLA APPROVAL:**



(signed)  
RAZ B. MCCOY  
Major General, USA  
Principal Deputy Director

## Defense Logistics Agency Comments

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**SUBJECT:** Audit Report on Contract for Rotary Sweeper Broom Refills for Airport Snow Removal (Project No. 6CF-5050)

**RECOMMENDATION NO. B1:** We recommend that the Commander, Defense Supply Center, Columbus, Defense Logistics Agency initiate an inspection of all current inventory to identify nonconforming tufted brushes delivered under Danline, Incorporated contracts SPO770-95-C-3508 and SPO770-96-C-3531.

**DLA COMMENTS:** Concur. DLA Depot stock from both contracts was sent to the Product Testing Center at Columbus. Testing on stock under contract SP0770-95-C-3508 was completed on January 31, 1997. Two brushes were inspected and both had major deficiencies with tufts that are not secured properly. Contract SP0770-96-C-3531 was completed on February 3, 1997. Nine of ten brushes have tufts that are not secured properly. On February 4, 1997, a Product Quality Deficiency Report (PQDR) for each contract number was initiated and forwarded to DCMC Springfield NJ and Danline, Inc. for investigation.

**DISPOSITION:** Action is ongoing. ECD: June 30, 1997

**ACTION OFFICER:** Catherine Heretick, MMPOA, (703)767-1361, March 24, 1997

**REVIEW/APPROVAL:** Robert L. Molino, Executive Director, MMP, March 24, 1997

**COORDINATION:** Oliver E. Coleman, DDAI, 767-6272

*Oliver Coleman 28 MAR 97*

**DLA APPROVAL:**



(signed)

RAY E. MCCOY

Major General, USA

Principal Deputy Director

**SUBJECT:** Audit Report on Contract for Rotary Sweeper Broom Refills for Airport Snow Removal (Project No. 6CF-5050)

**RECOMMENDATION NO. B2:** We recommend that the Commander, Defense Supply Center, Columbus, Defense Logistics Agency request consideration from Danline, Incorporated for nonconforming tufted brushes identified through inventory inspection.

**DLA COMMENTS:** Concur. PQDR's requested if Danline's responsibility for the defective material is determined, DSCC will be provided Danline's position regarding replacement or repair of material at no cost to the Government. Lab inspection determined the material did not meet contractual requirements. Danline must complete their investigation and present their position to DSCC. If required, negotiations will occur at that time.

**DISPOSITION:** Action is ongoing. ECD: May 30, 1997

**ACTION OFFICER:** Catherine Heretick, MMPOA, (703)767-1361, March 24, 1997

**REVIEW/APPROVAL:** Robert L. Molino, Executive Director, MMP, March 24, 1997

**COORDINATION:** Oliver E. Coleman, DDAI, 767-6464

*Oliver Coleman 28 MAR 97*

**DLA APPROVAL:**

*Ray E. McCoy*

(signed)

RAY E. MCCOY

Major General, USA

Principal Deputy Director

## Defense Logistics Agency Comments

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**SUBJECT:** Audit Report on Contract for Rotary Sweeper Broom Refills for Airport Snow Removal (Project No. 6CF-5050)

**RECOMMENDATION NO. B3:** We recommend that the Commander, Defense Supply Center, Columbus, Defense Logistics Agency initiate a product laboratory test on the Danline, Incorporated tufted brush to validate that the purchase description performance requirements are being met by the contract terms.

**DLA COMMENTS:** Concur. The current DSCC procurement is for previously acceptable continuous wire brushes and is being procured by CAGE and Part Number, not a purchase description. DSCC Quality Assurance and Value Engineering personnel and DCMC Quality Assurance personnel are developing quality assurance criteria for the current procurement which will insure the contractor has an acceptable in-house control process over production. Because the government does not have design control and the procurement lacks specific technical characteristics, the normal quality requirements are final inspection for identification, count and condition. However, DSCC Quality Assurance and DCMC personnel are coordinating efforts to insure that in-process inspection will be performed while the brush is being manufactured. DSCC Quality will issue a Quality Assurance Letter of Instruction (QALI) asking for inspections of specific manufacturing processes. DSCC Quality will also request the Product Verification Testing (PVT) clause be added to the contract. Lab testing for workmanship may be requested by DSCC Quality or DCMC personnel, if in-process inspection does not verify a quality product.

**DISPOSITION:** Action is ongoing. ECD: September 30, 1997

**ACTION OFFICER:** Catherine Heretick, MMPOA, (703)767-1361, March 24, 1997

**REVIEW/APPROVAL:** Robert L. Molino, Executive Director, MMP, March 24, 1997

**COORDINATION:** Oliver E. Coleman, DDAI, 767-6464

*Oliver Coleman 28 MAR 97*

**DLA APPROVAL:**

*[Signature]*

(signed)

RAY E. MCCOY

Major General, USA

Principal Deputy Director



**SUBJECT:** Audit Report on Contract for Rotary Sweeper Broom Refills for Airport Snow Removal (Project No. 6CF-5050)

**RECOMMENDATION NO. B4:** We recommend that the Commander, Defense Supply Center, Columbus, Defense Logistics Agency alert DoD military airfields on the operational limitations of Danline tufted brushes for snow and ice removal applications.

**DLA COMMENTS:** Concur. DSCC will recommend a safety alert be sent to customers identified in the requisition history files.

**DISPOSITION:** Action is ongoing. ECD: June 30, 1997

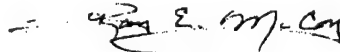
**ACTION OFFICER:** Catherine Heretick, MMPOA, (703)767-1361, March 24, 1997

**REVIEW/APPROVAL:** Robert L. Molino, Executive Director, MMP, March 24, 1997

**COORDINATION:** Oliver E. Coleman, DDAI, 767-6464

*Oliver Coleman 28 MAR 97*

**DLA APPROVAL:**



(signed)  
RAY E. McCOY  
Major General, USA  
Principal Deputy Director

## Defense Logistics Agency Comments

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**SUBJECT:** Audit Report on Contract for Rotary Sweeper Broom Refills for Airport Snow Removal (Project No. 6CF-5050)

**RECOMMENDATION NO. B5:** We recommend that the Commander, Defense Supply Center, Columbus, Defense Logistics Agency modify future contracts to require contractors to include instructions for installing and operating brushes on rotary sweepers.

**DLA COMMENTS:** Concur with the intent of the recommendation. Instructions for installing and operating brushes are normally supplied with the end item. It is our practice in the acquisition of commercial items to acquire the technical data customarily provided to the public. The Defense Industrial Supply Center and the Defense Supply Center, Columbus, will explore the necessity of providing instructions with these items with our customers and contractors.

**DISPOSITION:** Action is ongoing. ECD: September 30, 1997

**ACTION OFFICER:** Catherine Heretick, MMPOA, (703)767-1361, March 24, 1997

**REVIEW/APPROVAL:** Robert L. Molino, Executive Director, MMP, March 24, 1997

**COORDINATION:** Oliver E. Coleman, DDAI, 767-6464

*Oliver Coleman 28 MAR 97*

**DLA APPROVAL:**

*[Signature]*

(signed)  
RAY E. MCCOY  
Major General, USA  
Principal Deputy Director

**SUBJECT:** Audit Report on Contract for Rotary Sweeper Broom Refills for Airport Snow Removal (Project No. 6CF-5050)

**FINDING C: Quality Assurance Oversight.**

The DCMC, Springfield quality assurance oversight of the Danline contracts was inadequate. Inadequate oversight occurred because DCMC, Springfield quality assurance representatives (QAR) did not correctly assess Danline's process risk for manufacturing tufted brushes that met the required performance characteristics. In addition, DSCC did not classify the tufted brushes as a critical item needing additional quality assurance oversight. As a result, the Military Services have received nonconforming tufted brushes and military users are rejecting the nonconforming tufted brushes.

**DLA COMMENTS:**

DCMC Springfield concurs with this finding. The pre-PQDR quality assurance oversight was minimal. It only consisted of sampling visually verifiable characteristics during end item inspection. However, in classifying risk, the contractor's process effectiveness, efficiency, and sophistication was reviewed by using relevant Government and Contractor data. Defense Supply Center Columbus decision to waive First Article Test, the absence of prior PQDRs, and the non-complex nature of the tufted brush tend to support the QAR's initial decision to perform only end item inspection.

**INTERNAL MANAGEMENT CONTROL WEAKNESS:** Concur; weakness will be reported in the DLA Annual Statement of Assurance.

This weakness is considered material. The condition identified does not provide reasonable assurance that the compliance with existing management controls and the objective of the Internal Management Program are being met.

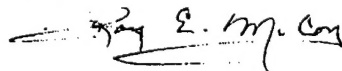
**ACTION OFFICER:** Georgeanna M. Adams, AQOG, 767-2367

**REVIEW/APPROVAL:** Gary S. Thurber, Associate Dir, AQ, 767-2396

**COORDINATION:** Oliver E. Coleman, DDAI, 767-6464

*Oliver Coleman 28 MAR 97*

**DLA APPROVAL:**



(SIGNED)  
GARY S. THURBER  
Major General, USA  
Principal Deputy Director

## Defense Logistics Agency Comments

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**SUBJECT:** Audit Report on Contract for Rotary Sweeper Broom Refills for Airport Snow Removal (Project No. 6CF-5050)

**RECOMMENDATION No. C1:** We recommend the Commander, Defense Contract Management Command, Springfield, Defense Logistics Agency, quality assurance representatives inspect all future deliveries of Danline tufted brushes, before acceptance, until Defense Supply Center, Columbus changes the brush design, Danline improves its manufacturing processes, or the Government purchases the brushes using a commercial item description.

**DLA COMMENTS:**

Concur with this recommendation.

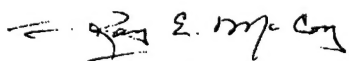
**DISPOSITION:** Action is ongoing. ECD: April 17, 1997

**ACTION OFFICER:** Ms. Georgeanna M. Adams, AQOG, 767-2367

**REVIEW/APPROVAL:** Gary S. Thurber, Associate Dir, AQ, 767-2396

**COORDINATION:** Oliver E. Coleman, DDAI, 767-6464

**DLA APPROVAL:**

*Oliver E. Coleman 28 MAR 97*  


(Typed)  
GARY S. THURBER  
Major General, USA  
Principal Deputy Director

## **Audit Team Members**

This report was prepared by the Contract Management Directorate, Office of the Assistant Inspector General for Auditing, DoD.

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**B. DATE Report Downloaded From the Internet:** 10/26/99

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**D. Currently Applicable Classification Level:** Unclassified

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